Pest plants of Kapiti Island and neighbouring islands

Inventory, abundances and distributions

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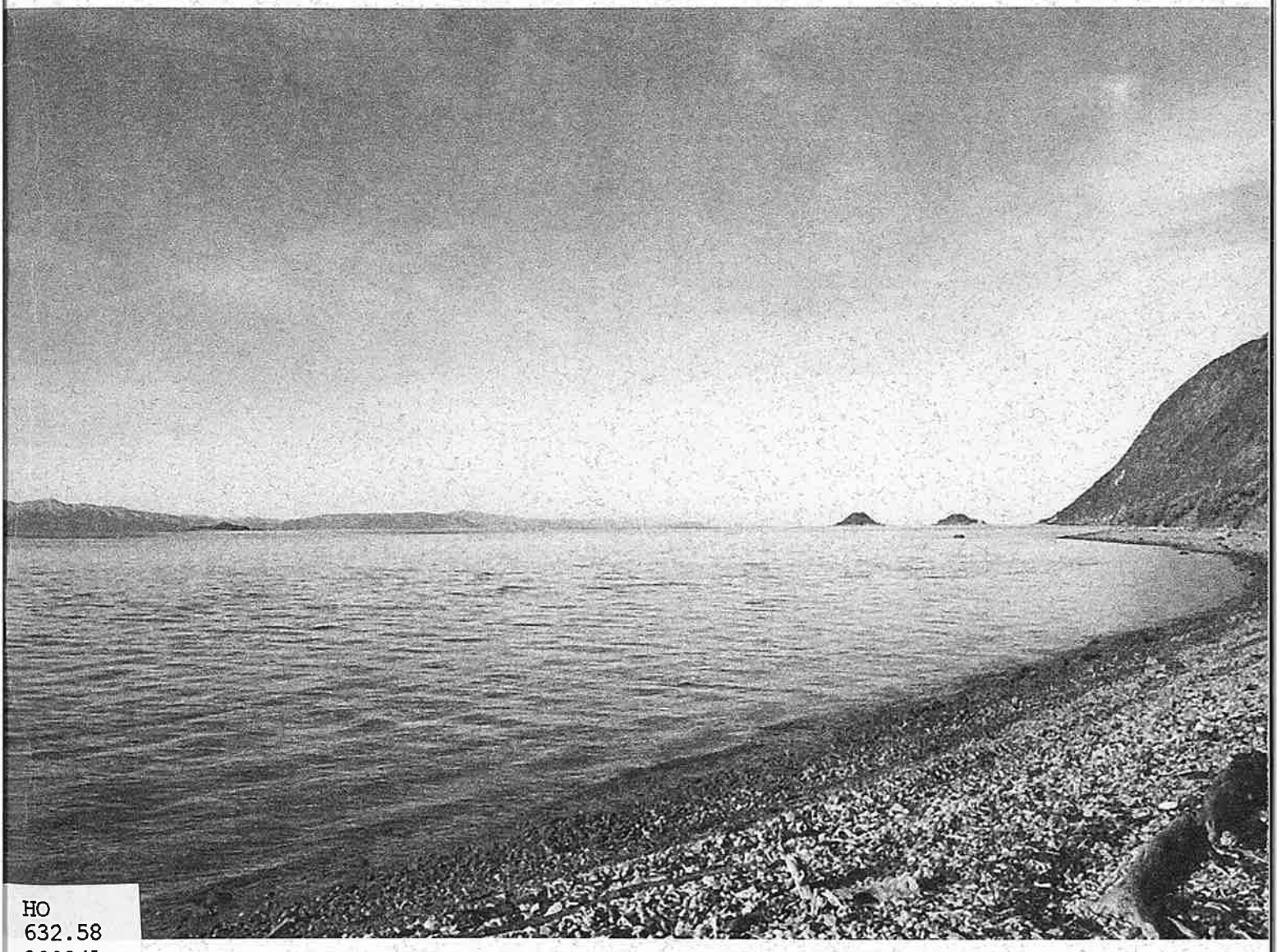

Department of Conservation
Te Papa Atawhai

Pest plants of Kapiti Island and neighbouring islands

Inventory, abundances and distributions

JUNE 2001

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Executive summary

Kapiti Island Nature Reserve and Motungarara, Tahoramaurea and Tokomapuna Islands are highly regarded by the Department of Conservation for their biological importance. They support indigenous forest and coastal communities and many nationally endangered plant and animal species. Pest plants (weeds) pose a significant threat to the structure, function and composition of the indigenous plant and animal communities on these islands. To manage that threat, a survey was carried out to record the weed species present on the islands and their abundance and distribution. This report provides an inventory of 200 exotic plant species on the islands. Sixty-six species were recorded additional to those already known from the islands from previous surveys. Most of those additions were found at Waiorua Bay, Rangatira flat, Motungarara and Tokomapuna.

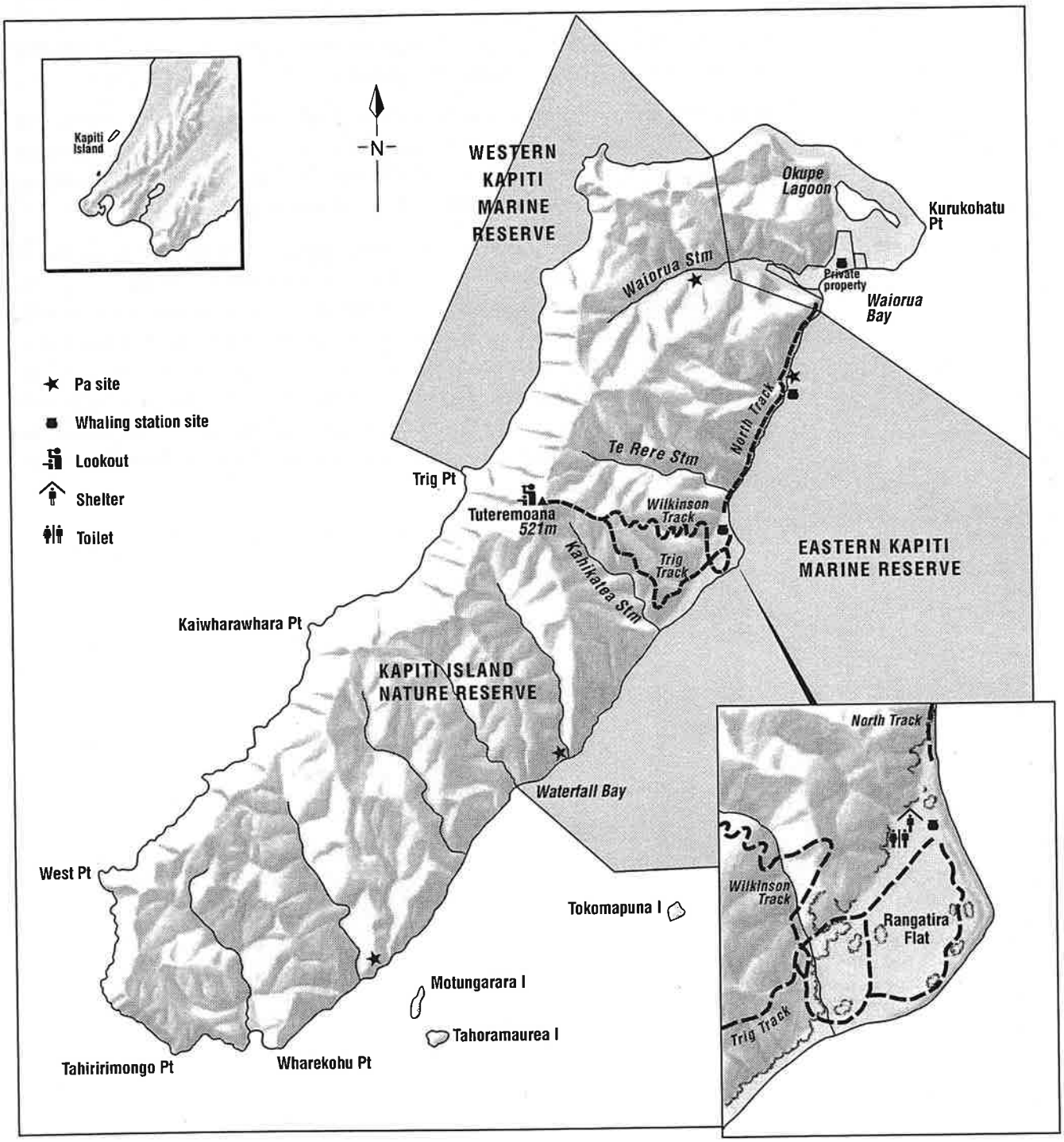
Eight plant species indigenous to New Zealand but not native to the region and introduced to Kapiti were surveyed because they were also perceived as a threat to the island's indigenous biota. A full inventory of introduced indigenous plants, not native to Kapti was not completed as part of this work.

An assessment was then made of the exotic species recorded on the island to determine which were worthy of control or some form of management. One hundred and eleven weed species were identified as worthy of pest management. Approximately 50 of those species were considered to pose a serious threat to the island's indigenous biota. Distribution information about the 111 species is stored on the National Weed database. Recommendations are made regarding pest plant management of those weed species to protect the biological communities of the four islands. Control of weeds on private property will only be undertaken with permission of land-owners.

1. Introduction

1.1 GENERAL INFORMATION

Kapiti Island (1965.65 ha) is situated approximately 6 km off the west coast of the lower North Island (Figure 1) and is in the Sounds/Wellington Ecological Region. Kapiti Island Nature Reserve occupies 1765 ha of the island and is regarded as one of New Zealand's premier conservation areas. A block of 190 ha at the northern end of the island is Crown land and is administered by the Commissioner of Crown



Lands, Land Information New Zealand (LINZ). A 14.9 ha block at Waiorua Bay is privately owned and contains several buildings that are in regular use. The three islands near the south east coast of Kapiti Island, Motungarara, Tahoramaurea and Tokomapuna (Figure 1) are also privately owned. Motungarara has several buildings that are frequently occupied.

This report explains how an inventory was compiled of the exotic plant species found on Kapiti and its neighbouring islands. An assessment was then made to determine which exotic plant species should be classified as weeds and worthy of pest management. The distribution and abundance of those weeds on the islands is then described. Recommendations are also provided regarding weed management on the islands. Common names for all plants mentioned in the text are provided in Appendix 4.

1.2 MANAGEMENT AIMS AND BIOLOGICAL IMPORTANCE

The Department of Conservation's aims for the indigenous biota of Kapiti Island Nature Reserve are as follows (taken from the Conservation Management Strategy 1996-2005, Department of Conservation, 1996):

- Conservation of the indigenous habitats, ecosystems and indigenous flora and fauna of Kapiti Island; and
- Use of the island as a sanctuary for nationally threatened species.

Kapiti Island Nature Reserve is one of the highest ranked conservation sites in Wellington Conservancy based on botanical and wildlife criteria (Sawyer & Brady 1997). The reserve is of special biological importance because it supports populations of threatened animals such as takahe (*Notornis mantelli*), hihi/stichbird (*Notiomystis cincta*), little spotted kiwi (*Apteryx owenii*), tokoeka (*A. australis*), tieke/saddleback (*Philesturnus carunculatus*), North Island kokako (*Callaeas cinerea*) and long-tailed bat (*Chalinolobus tuberculatus*). Threatened indigenous plant species also occur on the island and include Cook's scurvy grass (*Lepidium oleraceum*), sea spurge or waiu-atua (*Euphorbia glauca*), kokomuka (*Hebe elliptica* var. *crassifolius*), the leafless mistletoe (*Korthalsella salicornioides*) and white mistletoe or tapia (*Tupeia antarctica*). Kapiti Island also supports the only known population of the, as yet undescribed, ground weta *Hemiandrus* sp., and populations of regionally rare lizards including the ornate skink (*Cyclodina ornata*), forest gecko (*Hoplodactylus granulatus*) and Wellington green gecko (*Naultinus elegans punctatus*). The island is also of biological importance because it supports a variety of indigenous forest communities, shrublands, wetlands and other habitats.

The absence of mammalian browsing mammals and predators, and the restricted species richness and distribution of weeds on Kapiti Island allows native organisms and native communities to survive and, to a large extent, thrive on the island. Opportunities exist on Kapiti Island for the introduction of additional native species including threatened species. The biological importance of the three neighbouring islands is more limited than that of Kapiti Island. However, each island has the potential to provide habitat for the restoration of native coastal communities and populations of threatened species. Tokomapuna hosts at least one specimen of the regionally rare large-leaved milk tree (*Streblus banksii*).

1.3 VEGETATION OF KAPITI ISLAND AND THE NEED FOR PEST PLANT MANAGEMENT

Most of Kapiti Island's pre-European vegetation, tall native forest, was cleared for pastoral farming in the 19th Century. The island is now predominantly covered in regenerating native forest. Tawa and rata/kamahi forests are the most common vegetation types in the central part of the island. Elsewhere, kohekohe forest, kanuka forest and manuka scrub predominate (Fuller 1985). Other features of Kapiti Island are coastal shrublands, grasslands, a lagoon and other small wetlands.

Several botanical reports have been produced for Kapiti Island (see Appendix 2). However, none focused exclusively on plant species that threaten the island's biota and how to control those species. Atkinson (1997) identified a number of weed threats to the biological communities of Kapiti and its nearby islands. The island's caretakers and staff of the Department of Conservation carried out weed control over a number of years but it was not until 1996, during the rat eradication programme (of *Rattus exulans* and *R. norvegicus*), that a systematic weed control programme was started.

1.4 PLANTS CONSIDERED AS WEEDS

The first major step towards preparing a weed control plan was the preparation of a comprehensive inventory of the exotic plant species that occur on Kapiti Island and its neighbouring islands (Tokomapuna, Motungarara and Tahoramaurea). Of those species, a number were considered weeds and worthy of pest control to protect the indigenous biota of Kapiti from the threat that they posed. Plant species were considered weeds if they met any of the following criteria:

- known to be a serious threat to the biota of the islands;
- suspected of being a serious threat to the biota;
- very limited in distribution and known to be weedy elsewhere in New Zealand;
- identified as a pest by Wellington Regional Council (see Appendix 3).

All exotic plant species were included in the initial inventory even if they did not meet the above criteria. This was done in order to prepare a more complete inventory of the islands' flora. However, a number of garden plants at Rangatira, Waiorua Bay and Motungarara were not recorded if not thought to be a threat to the island's biological communities. Introduced New Zealand native plant species (i.e., not native to any of the four islands) regarded as weeds on the islands are listed separately.

2. Methods

2.1 LITERATURE REVIEW

A number of plant checklists have been prepared recording exotic plant species on Kapiti Island and its neighbouring islands (see Appendix 2). One of the only published lists of exotic plants on Kapiti was compiled by Fuller (1985). Exotic plant species recorded in these reports and considered weeds (according to the criteria described in 1.4) were targeted during surveys. Several species recorded in the reports were omitted for the reasons provided in Appendix 5.

2.2 FIELD SURVEY

During April 1997 Kapiti Island, Motungarara, Tahoramaurea and Tokomapuna were surveyed for weeds. The authors gained familiarity with the exotic plant species prior to undertaking the field survey. Surveying on Kapiti Island was largely conducted on foot along public tracks, shorelines and many of the old possum eradication tracks. Approximately 15% of the possum tracks had been re-opened in 1996 for a rat eradication programme. The island's interior was surveyed along several tracks within each catchment. Much of the western cliffs were traversed and/or scanned through binoculars while on foot. The coastline between Rangatira Flat and Wharekohu Bay was scanned through binoculars from a slow-moving boat. The entire north coast and most of the east coast (from *c.*500m north of Wharekohu Bay) were surveyed on foot.

On Kapiti Island all vegetation types described by Fuller (1985) were surveyed. Particular attention was given to sites of past or present human settlement such as areas at and adjacent to Rangatira Flat and Waiorua Bay, the only sites on Kapiti Island that have been occupied by humans in a permanent/semi-permanent manner in recent times. Particular attention was also given to ridges with relatively open vegetation. In the tall interior forests many of the light-gaps (e.g., those resulting from fallen trees and slips) that were visible from the track were surveyed. Areas beneath large trees visible from the track were also surveyed as they were considered likely bird roosting sites and therefore sites where weed seeds would be deposited. Motungarara, Tahoramaurea and Tokomapuna islands were circumnavigated on foot along their shorelines and penetrated on foot as far as possible. Motungarara is the only one of the three small islands currently occupied (semi-permanently) by people. The relatively tall and open vegetation enabled almost complete coverage of the island on foot.

Specimens of some species were collected for identification purposes. Specimens identified by the authors were destroyed. Other specimens were lodged with the Landcare Research Herbarium at Lincoln (CHR). Pest plant infestation record sheets (see Appendix 7) were used to record details of each infestation found during the survey[1]. Approximately 400 person hours were required during the surveying and other work associated with this report (excluding plant specimen identification at Landcare Research).

[1] Copies of which are held at Wellington Conservancy Office, Department of Conservation.

3. Results

3.1 EXOTIC VASCULAR PLANTS OF KAPITI AND NEIGHBOURING ISLANDS

Table 1 includes all known records of naturalised exotic vascular plants on Kapiti Island and its neighbouring islands. Sixty-six species in Table 1 have not been recorded previously. Many new records were from Waiorua Valley, Rangatira, Motungarara and Tokomapuna. It is likely that most of the exotic plant species previously recorded on Kapiti Island are still present even if they were not located during this survey. Reasons for the omission of plant species referred to in previous literature but not included in this table are provided in Appendix 5. In Tables 1 shaded cells denote plants that fall into one or more of the four categories described in section 1.4. Details regarding the abundance and distribution of these plants were sought and are described below (additional information regarding distributions is also provided in Table 3). All plants are considered fully naturalised unless otherwise stated. Ten species at the end of Table 1 were not identified to species level but were still recorded. Further work to determine the identity of these species will be required in order to complete the inventory of exotic plant species.

3.2 INDIGENOUS SPECIES AS WEEDS ON KAPITI AND NEIGHBOURING ISLANDS

Many indigenous plant species have been introduced to Kapiti Island that are not native to the region (including beech, puriri, king fern and kauri). A small number of these non-native indigenous species are of concern because of their potential to become weeds on Kapiti Island and neighbouring islands. Those that could conveniently be recorded during field surveys and meet the weed classification criteria in Section 1.4 are shown in Table 2. This list is preliminary only and additional records may be sent to the Wellington Conservancy, Department of Conservation. The issue of management of introduced indigenous plants that are not native to the islands requires further discussion.

3.3 WEED DISTRIBUTION

Table 3 provides more information about weed distribution on Kapiti and neighbouring islands. Species referred to in Table 3 correspond with those in shaded cells in Tables 1 and 2. Table 3 shows that 76 (68%) of the 111 plants, including most of the more serious weeds are believed to have very limited distributions. Of the 29 (26%) of species that are widely distributed, few are considered as serious weeds. It was difficult to accurately determine the distributions of 9 (7.9%) of the species. However, their distributions are likely to be somewhat limited since they were not detected during the field survey. It is believed that *Pinus radiata*, previously recorded on the islands, has now been eradicated entirely.

TABLE 1: EXOTIC VASCULAR PLANTS OF KAPITI ISLAND, MOTUNGARARA, TAHORAMAUREA AND TOKOMAPUNA

LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
*Acacia dealbata?** (uncertain which sp.)	•				KI. Two seedlings beside Assistant Ranger' s house. Seeds likely to be present.		•	Seedlings appeared soon after construction of Assistant Ranger' s house. Specimen KI19. Need fertile material for positive identification.
*Acer pseudoplatanus**	•				KI. At least one young tree at Waiorua settlement.		•	Probably planted and apparently not naturalised. Specimen KI31.
Achillea millefolium	•				Not recorded.	•		
*Acmena smithii**	•				KI. Three saplings and one mature tree with many seedlings directly underneath it, at Waiorua Bay.		•	All seedlings appear to be < 1 year old and may all have germinated after the eradication of rats in 1996. No plants of intermediate ages seen. Specimens KI21 and KI51.
*Agapanthus praecox**	•	•			KI. Several patches at Waiorua Bay and beside Ranger' s house. MI. One small patch at northern end of lawn.		•	
Agrostis capillaris	•				KI. Scattered throughout most/all grasslands. Few large patches.	•	•	Recorded as '*A. tenuis*' by Fuller (1985) but now known as *A. capillaris* (Lambrechtsen, 1992).
Agrostis gigantea	•				Not recorded.	•		

*KI = Kapiti Island MI = Motungarara Island Th = Tahoramaurea Island Tk = Tokomapuna Island F = Fuller (1985) * = Not known to have been recorded previously.*
Shaded cells denote that the species has been classified as a weed using the criteria in Section 1.4

TABLE 1: EXOTIC VASCULAR PLANTS OF KAPITI ISLAND, MOTUNGARARA, TAHORAMAUREA AND TOKOMAPUNA

LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
Agrostis stolonifera	•				KI. Occasional.	•	•	
Atra caryophyllea	•				Not recorded.	•		
Atzoaceae sp. (uncertain which genus)	•				KI. Several small plants on southern coastal edge of Kurukohatu Spit.		•	Specimen KI61. Fertile material needed for more accurate identification. Desirable to clarify identity.
*Alocasia brisbanensis**	•				KI. Waiorua Bay; in creek amongst southern group of houses.		•	Apparently not naturalised.
*Ammophila arenaria**	•				KI. One large patch on coastline near new visitor shelter at Rangatira Flat.		•	
Anagallis arvensis	•				Not recorded.	•		
*Angelica pachycarpa**	•				KI. Several small patches on coastline north of Okupe Lagoon.		•	
Anthoxanthum odoratum	•				KI. Presence noted but abundance and distribution not sought.	•	•	Specimen KI67.
*Apium nodiflorum**	•				KI. One small patch in creek at Waiorua Bay.		•	Specimen KI58. Fertile material was needed for accurate identification. Later identified by Colin Ogle as this sp.

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Shaded cells denote that the species has been classified as a weed using the criteria in Section 1.4

TABLE 1: EXOTIC VASCULAR PLANTS OF KAPITI ISLAND, MOTUNGARARA, TAHORAMAUREA AND TOKOMAPUNA

LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
*Arctotheca calendula**	•				KI. Several plants on coast north-east of Okupe lagoon.		•	Specimen KI28.
*Aspidistra elatior**	•	•			KI. One small patch at Waiorua Bay. MI. One small patch amongst garden plantings.		•	Both populations are small contiguous patches which appear to have spread slightly outwards from their original planting sites. Apparently not fully naturalised. Specimens KI3 and KI7.
Bellis perennis	•				KI. Presence noted but abundance and distribution not sought.	•	•	
Briza major	•				Not recorded.	•		
Briza minor	•				Not recorded.	•		
Bromus diandrus	•				KI. Presence noted but abundance and distribution not sought.	•	•	Specimen KI66.
Bromus hordeaceus	•				Not recorded.	•		Recorded as '*B. mollis*' by Fuller (1985) but now known as *B. hordeaceus* (Lambrechtsen, 1992).

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Shaded cells denote that the species has been classified as a weed using the criteria in Section 1.4

TABLE 1: EXOTIC VASCULAR PLANTS OF KAPITI ISLAND, MOTUNGARARA, TAHORAMAUREA AND TOKOMAPUNA

LATIN NAME	REORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
Bromus willdenowii	•				KI. Lightly scattered throughout lowland grasslands.	•	•	Has been known as *B. catharticus* and B. *unioloides* (Lambrechtsen, 1992). Fuller (1985) recorded the latter. Specimens KI16 and KI72.
Callitriche stagnalis	•				KI. Scattered in Rangatira Stream and nearby pond on Rangatira Flat. At mouth of Te Mimiorakopa Stream. In Wharekohu Stream near hut.	•	•	Specimens KI10 and KI25. Very probably this sp. but need fruit to confirm (Bill Sykes, pers. comm.). Desirable to clarify identity.
Capsella bursa-pastoris	•				Not recorded.	•		
Carduus tenuiflorus	•				Not recorded.	•		
Carpobrotus edulis	•				Not recorded.	•		
Centaurea melitensis	•				KI. Cliff-tops at head of Waiorua Valley (Colin Ogle, pers. comm.).			
Centuarium erythraea	•				Not recorded.	•		
Cerastium fontanum ssp. *triviale*	•				Not recorded.	•		

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TABLE 1: EXOTIC VASCULAR PLANTS OF KAPITI ISLAND, MOTUNGARARA, TAHORAMAUREA AND TOKOMAPUNA

LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
Cerastium glomeratum	•				Not recorded.	•		
Chamaecytisus palmensis	•	•	•		KI. Scattered throughout lowland grasslands; heavily scattered throughout grassland at Waiorua Bay. Small patches near hut at Okupe Lagoon, near Ranger' s house at Rangatira and near hut at Wharekohu. MI. Scattered throughout. Th. Patches amongst shrubland on northern side.	•	•	
*Cheiranthus cheiri**		•			MI. Several small patches at northern end.		•	Specimen KI48.
Chenopodium album	•				Not recorded.	•		
Chenopodium pumilio	•				Not recorded.	•		Recorded as '*C. pumila*' by Fuller (1985).
*Chrysanthemoides monilifera**		•	•		MI. Several small patches, mostly on western face. Th. Several small patches, mostly on northern face.		•	
Cirsium arvense	•				KI. Several patches amongst grasslands at all altitudes.	•	•	Specified for control in the Business plan, 1997-98; Wellington Conservancy.

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Shaded cells denote that the species has been classified as a weed using the criteria in Section 1.4

TABLE 1: EXOTIC VASCULAR PLANTS OF KAPITI ISLAND, MOTUNGARARA, TAHORAMAUREA AND TOKOMAPUNA

LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
Cirsium vulgare	•	•	•		KI. Scattered throughout grasslands. Less frequent along coastline & recently reopened track-ends/beginnings. MI. Scattered lightly throughout. Th. Scattered throughout.	•	•	Specimen KI27. Specified for control in the Business plan, 1997-98; Wellington Conservancy.
Conium maculatum	•				KI. Presence noted but abundance and distribution not sought.	•	•	
Conyza albida	•				KI. Presence noted but abundance and distribution not sought.	•	•	Fuller (1985) recorded '*C. floribunda*' and '*Erigeron floribundus*' but in New Zealand both are referable to *C. albida* (Webb et al., 1988).
Coronopus didymus	•				Not recorded.	•		
Coronopus squamatus	•				Not recorded.	•		
Cortaderia jubata/selloana (uncertain which spp. present)*	•	•			KI. One plant at Webber' s residence, Waiorua Bay. MI. Two plants amongst gardens.		•	Apparently not naturalised.
Cotula australis	•				Not recorded.	•		
Crepis capillaris	•				Not recorded.	•		

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LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
Crocosmia ×crocosmiiflora	•				KI. One small patch on N side of Upper Boat Shed Track close to north-east corner of whare. Several patches of various sizes (some large) around Waiorua Bay.	•	•	Recorded as '*Crocosmia × crocosmiifolia*' by Fuller (1985).
Cynosurus cristatus	•				Not recorded.	•		
*Cyperus albostriatus**	•				KI. At least two small patches at Waiorua Bay.		•	Specimen KI30.
*Cyphomandra betacea**	•			•	KI. One plant in vegetable garden at Ranger' s house. Tk. One plant in weedy shrubland near north-east point of island.		•	Naturalised on Tokomapuna I., but apparently not on Kapiti I.
*Cytisus scoparius**		•			MI. One small patch amongst tall vegetation at southern end.		•	
Dactylis glomerata	•	•	•		KI. Heavily scattered throughout. Some large patches. MI. Scattered throughout. Th. Scattered throughout.	•	•	

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LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
*Digitalis purpurea**	•				KI. One small patch with scattered individuals under short patchy kanuka forest half-way between Waiorua Bay and Okupe Lagoon. Likely to be other populations elsewhere.		•	
Ehrharta erecta	•	•	•	•	KI. Scattered beside tracks and amongst open coastal vegetation, coastal rocks and kanuka forest edges at Waiorua Bay, Honeymoon Bay, N of Te Kahuoterangi Stream mouth, Rangatira, Te Mingi Stream mouth & Wharekohu Bay. Likely to be in similar habitats throughout the island. MI. Patches throughout. Th. Patches throughout. Tk. Patches throughout.		•	Recorded by Ogle (1986). Some plants thought to be this sp. during surveying may have been the native grass *Microlaena stipoides*, recorded as present on Kapiti I. by Fuller (1985). Without seed heads *E. erecta* can be confused with *M. stipoides*, a close relative which was previously known as *E. stipoides* (Hugh Wilson, pers comm.). Desirable to clarify true distribution of *E. erecta*. Description of abundance and distribution relates only to certain *E. erecta* records. Specimen KI17.
*Erica lusitanica**	•				KI. One small patch on spur near bottom of Track 15. Probably more in similar localities.		•	
*Erigeron karvinskianus**	•				KI. One small patch in Boysie' s garden at Waiorua Bay. Two small patches between Ranger' s house and whare. One small patch on coastline just south of Otehou Stream.	•	•	Specimen KI13.

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LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
Erodium cicutarium	•				Not recorded.	•		
*Eucalyptus globulus**	•				KI. One mature planted tree near settlement in Waiorua Valley.		•	Specimen KI43. Apparently not naturalised.
Eucalyptus sp.*	•				KI. Several mature planted trees near houses at Waiorua Bay.		•	Specimen KI42. Need bark, flower buds and capsules for more accurate identification. Apparently not naturalised. Desirable to clarify identity.
*Euonymus europaeus**	•				KI. One mature tree just south-east of Ranger' s house. One young tree just north-east of vegetable garden on Rangatira Flat. One tree SW of houses at Waiorua Bay.		•	
Euphorbia peplus	•				Not recorded.	•		
*Fatsia japonica**		•			MI. One plant, probably planted, amongst buildings.		•	Specimen KI46. Apparently not naturalised.

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LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
Festuca arundinacea	•		•		KI. Patchy throughout grasslands and eastern coastline, especially between Mangawhahariki and Kaiwharawhara Streams, and between Te Mimiorakopa and Otehou Streams. Th. One small patch near NW corner.	•	•	Recorded as '*Festuca arundinaceae*' by Fuller, 1985). Specimen KI55.
Festuca rubra ssp. *commutata*	•				Not recorded.	•		
*Ficus carica**	•				KI. At least one plant amongst trees near middle of houses at Waiorua Bay and one up-valley near junction of Tracks 4 and W28 (in kanuka forest near grassland).		•	Specimens KI12 and KI32.
Fumaria muralis	•				Not recorded.	•		
Fumaria officinalis	•				Not recorded.	•		
Galium aparine	•				Not recorded.	•		
Geranium molle	•				Not recorded.	•		

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LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
Geranium robertianum	•				Not recorded.	•		
Glaucium flavum	•				KI. One plant near Kurukohatu Point.	•	•	Specimen collected.
*Hardenbergia violacea**		•			MI. One plant climbing trellis at northern end of southern-most building.		•	Specimen KI26. Apparently not naturalised.
*Hedera helix**				•	Tk. One small patch which may consist of only one plant, amongst weedy shrubs near north-east point.		•	
Hedychium gardnerianum	•				KI. One large, isolated patch at Waiorua Bay.	•	•	Recorded as '*Hedychium* sp.' by Fuller (1985). Specimen KI9. Presence of juveniles means it must be this sp. because it is the only adventive *Hedychium* sp. that reproduces sexually (Bill Sykes, pers. comm.).
Holcus lanatus	•				KI. Presence noted but abundance and distribution not sought.	•	•	
Hordeum murinum	•				KI. Presence noted but abundance and distribution not sought.	•	•	
Hypochoeris radicata	•				Not recorded.	•		

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TABLE 1: EXOTIC VASCULAR PLANTS OF KAPITI ISLAND, MOTUNGARARA, TAHORAMAUREA AND TOKOMAPUNA

LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
Juncus articulatus	•				Not recorded.	•		
Lagurus ovatus	•				KI. Scattered lightly on North-East Track near Okupe Lagoon; on Rangatira Flat, just north of Mangawharariki Stream; between Paripatea and Te Kahu-o-te-rangi Streams and around Wharekohu Bay.	•	•	
Lamium purpureum	•				Not recorded.	•		
Lapsana communis	•				Not recorded.	•		
*Laurus nobilis**	•				KI. One mature tree between Ranger' s house and whare, probably planted.		•	Specimen KI23. Apparently not naturalised.
*Lavatera arborea**	•	•		•	KI. One patch on coast north of Okupe Lagoon. One patch at Waiorua Bay. MI. Local patches. Tk. Patches around coastline.	•	•	Specimen KI41. Need flowers & fruit for more accurate identification. May be *Lavatera cretica*. Fuller (1985) recorded '*Malva* sp. (*M. neglecta*?)' on Kapiti I. & there appears to be at least two Malvaceae spp. present amongst the four islands. Desirable to clarify identity.
Leontodon taraxacoides	•				Not recorded.	•		

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LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
Lepidium sp. (uncertain which sp.)	•				Not recorded.	•		Recorded as '*Lepidium* sp.; cress' by Fuller (1985).
Leptospermum sp.?* (uncertain which sp.)	•				KI. Waiorua Bay; just north of Webber' s house.		•	Not naturalised.
*Leptospermum? Polygalifolium** (uncertain which genus)		•			MI. One plant at southern end of lawn.		•	Specimen KI53. Not naturalised.
*Leucanthemun maximum**		•			MI. Several small patches around buildings at northern end.		•	Specimen KI49.
*Lobularia maritima**		•			MI. Several plants in garden at north end of northern buildings.		•	All plants noticed had been planted recently. Apparently not naturalised.
Lolium perenne	•				KI. Scattered throughout most/all grasslands.	•	•	
Lotus pedunculatus	•				KI. Patches throughout wetter parts of all lowland grasslands.	•	•	Recorded as '*Lotus pedunculatis*' by Fuller (1985).

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LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
Lupinus arboreus	•	•	•		KI. Scattered throughout northern and western cliffs and near hut at Okupe Lagoon. MI. One small patch on western side between the two groups of buildings. Th. Scattered throughout northern side.	•	•	
Lycium ferocissimum	•		•	•	KI. Two small patches near, and on either side of, Kurukohatu Point. Th. One small patch at middle of northern side. Tk. Large stands at margins of western and northern vegetation with smaller patches on other margins and a few plants in the interior.	•	•	
*Malus × domestica**	•		•		KI. A few individual scattered plants.		•	Specimen KI60. Not fully naturalised.
*Malva parviflora**	•				KI. One patch at Waiorua Bay. MI. Local patches.		•	
Marrubium vulgare	•				KI. At least two small patches on ridges above Kaiwharawhara and Mangawharariki catchments.	•	•	Specimen KI33.
Medicago arabica	•				Not recorded.	•		

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LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
Medicago lupulina	•				Not recorded.	•		
Medicago nigra	•				Not recorded.	•		Recorded as '*M. hispida*' by Fuller (1985) but is now known as this sp. (Webb et al., 1985).
*Melanoselinum decipiens**		•			MI. One vigorous plant at northern end of middle building. Probably planted.		•	Specimen KI54. Not naturalised.
Mentha spicata	•				Not recorded.	•		Fuller (1985) listed this sp. and '*M. viridis*' which is now known as *M. spicata* subsp. *spicata* (Webb et al., 1988;).
Narcissus bifloris	•				Not recorded.	•		
Nephrolepis cordifolia	•				KI. Two small vigorous patches in Boysie' s garden at Waiorua Bay.		•	Specimen KI71. Apparently not naturalised.
Oxalis incarnata? (uncertain which sp.)	•				Not recorded.	•		Recorded as '*Oxalis* sp. (*O. incarnata*?)' by Fuller (1985).
*Paraserianthes lophantha**		•			MI. Scattered throughout.		•	Specimen KI6.
Paspalum dilatatum	•				Not recorded.	•		

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LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
Passiflora mixta	•	•			KI. Several patches, some large, around Waiorua Bay. Several plants near graveyard on Okupe Flat. One plant in relatively open kanuka forest on Track 15 (true right of valley) and a few on the slope below Track 15, near the forest edge (and near Track 12). MI. Several plants along ridge.	•	•	Only *P. mollistma* was recorded by Fuller (1985) and this species was specified for control in the Business plan, 1997-98; Wellington Conservancy. However, all plants appear to be *P. mixta*. Specimens KI1 and KI64. Specimens collected on both islands are *P. mixta*. It seems likely that *P. mixta* plants had been identified incorrectly. Regular visitors to Waiorua Bay reported that this sp. had not spread from the housing area until after the eradication of possums in the 1980s.
*Pelargonium ×hortorum**		•			MI. One small patch which has spread outwards from original planting site amongst buildings at northern end.		•	Specimen KI2. Not fully naturalised.
*Phoenix canariensis**	•	•			KI. Amongst houses at Waiorua Bay. MI. Amongst houses and gardens.		•	To be identified from photograph. Not naturalised.
Physallis peruviana	•	•	•		KI. Several plants scattered between whare and new visitor shelter. Several at southern part of Waiorua Bay. MI. One small patch near southern-most building and another beside middle building. Th. A few plants near north west point.	•	•	

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LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
Phytolacca octandra	•	•	•	•	KI. Scattered throughout grasslands and northern and western cliffs, especially lower cliffs. On east coast, uncommon south of Rangatira Flat. MI. Scattered throughout. Th. Scattered throughout northern part of island. Tk. One large patch from middle to southern end and one small patch at eastern point.	•	•	
Picris echioides	•				Not recorded	•		
*Pinus radiata**	•				KI. Probably eradicated			Scattered individuals of various ages existed at and near the head of Taepiro Valley within the last 20 years, but all are thought to have been killed (Peter Daniel, pers. comm.).
Plantago coronpus	•				KI. Presence noted but abundance and distribution not sought.	•	•	Specimen KI4.
Plantago lanceolata	•				KI. Presence noted but abundance and distribution not sought.	•	•	
Plantago major	•				KI. Presence noted but abundance and distribution not sought.	•	•	

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LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
*Plectranthus ciliatus**	•				KI. One large contiguous patch at Waiorua Bay.		•	Specimen KI8.
Poa annua	•				Not recorded.	•		
Poa pratensis	•				Not recorded.	•		
Polycarpon tetraphyllum	•				Not recorded.	•		
Polygonum aviculare	•				Not recorded.	•		
*Polygonum persicaria**	•				KI. Large patches throughout wetter, grass-dominated parts of Waiorua Valley and Rangatira Flat.		•	
Portulaca oleracea	•				Not recorded.	•		
Prunella vulgaris	•				Not recorded.	•		
*Prunus persica**	•				KI. One mature tree near south east corner of Ranger' s house. One small plant at bush edge up Waiorua Valley. One small plant in grassy clearing on Track 3.		•	Fuller (1985) recorded '*Prunus* sp., peach?'. Specimen KI70. Need fertile material for positive identification.

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LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
*Pyrus communis**	•				KI. One mature tree at south eastern part of Waiorua Bay.		•	Probably planted. Apparently not naturalised.
*Ranunculus ficaria**	•				KI. One/two small patches at Waiorua Bay.		•	Specimen KI37.
Ranunculus parviflorus	•				Not recorded.	•		
Ranunculus repens	•				Not recorded.	•		
Ranunculus sardous	•				Not recorded.	•		
Ranunculus sceleratus	•				Not recorded.	•		
*Ribes rubrum**	•				KI. A few plants in vegetable garden at Ranger's house and a few in vegetable garden on Rangatira Flat.		•	All plants found were planted. Apparently not naturalised.
Rorippa nasturtium-aquaticum	•				Not recorded.	•		Recorded as '*Nasturtium officinale*' by Fuller (1985) but is now known as this sp. (Webb et al., 1988).
Rosa rubiginosa	•				KI. One plant on Track 29 on true left side of Wharekohu Valley.	•	•	

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LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
Rubus fruticosus agg.	•	•		•	KI. Several patches at the central and southern parts of the grassland in Waiorua Valley and around houses at Waiorua Bay. MI. Two small patches on north-east coastline. Tk. One large patch surrounded by tall shrubs near eastern point.	•	•	
Rumex acetosella	•				KI. Presence noted but abundance and distribution not sought.	•	•	
Rumex conglomeratus	•				Not recorded.	•		
Rumex crispus	•				Not recorded.	•		
Rumex obtusifolius	•				Not recorded.	•		
Rumex pulcher	•				Not recorded.	•		
Rytidosperma penicillatum	•				Not recorded.	•		
Rytidosperma racemosum	•				Not recorded.	•		

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LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
Sagina procumbens	•				Not recorded.	•		
*Salix fragilis**	•				KI. One mid-aged tree, probably planted, just up valley from Waiorua Bay.		•	Specimen KI40. Catkins required for more accurate identification. Apparently not naturalised. Desirable to clarify identity.
*Sambucus nigra**				•	Tk. Scattered throughout.		•	
*Selaginella kraussiana**	•				KI. Several very small patches near whare and on Trig track near stone seat. Possibly more in this area and beyond.		•	
*Senecio bipinnatisectus**	•				Not recorded.			One plant previously recorded on ridge at top of Maraetakaroro catchment (John Innes, pers. comm.).

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LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
Senecio elegans	•				KI. Scattered along coastline from Arapawaiti Point to Honeymoon Bay. Less common further inland amongst short, open vegetation. Occurs along Track 28 and the eastern edge of Okupe Lagoon. Common on coastline at Rangatira Flat, especially near Rangatira Point. Recorded south of Onepoto Bay, south of Te kahu-o-te-rangi- Stream mouth and in middle of Rangatira Flat in rough grassland. Uncommon south of these areas.	•	•	Specimen KI24.
Senecio jacobaea	•				KI. Scattered throughout damp grasslands south east of Okupe Lagoon, near ridge above Te Oneroa Bay (including adjacent parts of Track 62), at head of Taepiro catchment and below Seismometer Hut. Previously recorded at Rangatira Flat.	•	•	
Senecio mikanioides	•				KI. Two small patches on Rangatira Flat. One at teal enclosure and one between teal enclosure and vegetable garden.	•	•	*S. angulatus* is specified for control in the Business plan, 1997-98; Wellington Conservancy, but the plants concerned have since been identified as *S. mikanioides.*
Senecio sylvaticus	•				Not recorded.	•		

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LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
Senecto vulgaris	•				Not recorded.	•		
Sherardia arvensis	•				Not recorded.	•		
Silene gallica	•				Not recorded.	•		
Silybum marianum	•				KI. Waiorua Bay, on ridge above northern cliffs, in grassland south of the Trig and on ridge above Kaiwharawhara Point.	•	•	
*Solanum chenopodioides**	•	•	•	•	KI. Scattered throughout grasslands and along particularly open parts of most recently-reopened tracks. More prolific than *S. nigrum*. MI. Scattered throughout. Th. Scattered throughout. Tk. Scattered throughout.		•	Specimen KI73.
*Solanum dulcamara**				•	Tk. One plant amongst tall shrubs towards south- east end.		•	Specimen KI64.
Solanum nigrum	•	•	•	•	KI. Scattered throughout grasslands and along particularly open parts of most recently-reopened tracks. Less prolific than *S. chenopodioides*. MI. Scattered throughout. Th. Scattered throughout. Tk. Scattered throughout.	•	•	

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LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
Solanum pseudocapsicum	•				KI. Scattered throughout grassland and bush edge in Waiorua Valley, in grassy clearing on Track 3, near junction of Tracks 4 and W28, at junction of Tracks 15 and 11, and on North-east Track at middle of Honeymoon Bay.	•	•	
Solanum sp. (uncertain which sp.)	•				KI. Half-way along Track 78, Maraetakaroro catchment.		•	Specimen KI45. Need branch with flowers/fruit for more accurate identification. Desirable to clarify identity.
*Solanum tuberosum**	•				KI. One small patch at southern end of vegetable garden on Rangatira Flat. One small patch beside coastal strip of shrubs at southern end of Waiorua Bay.		•	Not fully naturalised.
Soliva sp. (uncertain which sp.)	•				Not recorded.	•		
Sonchus asper	•				Not recorded.	•		
Sonchus oleraceus	•				Not recorded.	•		
Spergularia rubra	•				Not recorded.	•		

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LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
Sporobolus africanus	•				KI. On ridge near northern-most point, along track just north of Okupe Hut and at northern-most point of Rangatira Flat. Probably occurs elsewhere amongst rough grasslands.	•	•	Specimen KI14.
Stellaria media	•				Not recorded.	•		
*Stenotaphrum secundatum**		•			MI. One moderately large patch on coastal edge of lawn (forms part of lawn which is c.10cm deep).		•	Specimen KI15.
Stipa setacea	•				Not recorded.	•		
Taraxacum officinale	•				Not recorded.	•		
Teline monspessulana	•				KI. One small patch.	•	•	Recorded as '*Teline* sp. (*T. monspessulana*?)' by Fuller (1985).
Trachycarpus fortunei *	•				KI. One mature plant (and two standing dead) at Waiorua Bay.		•	Specimen KI29.
Trifolium dubium	•				Not recorded.	•		

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LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
Trifolium glomeratum	•				Not recorded.	•		
Trifolium ornithopodioides	•				Not recorded.	•		
Trifolium repens	•				Not recorded.	•		
Trifolium striatum	•				Not recorded.	•		
*Tropaeolum majus**	•				KI. Two small patches on Rangatira Flat; one at teal enclosure and the other between this site and vegetable garden.		•	Specified for control in the Business plan, 1997-98; Wellington Conservancy.
Ulex europaeus	•	•			KI. Several large patches amongst kanuka forest adjacent to Track 3. One small patch near Kurukohatu Point. One seedling at Assistant Ranger' s house. One small patch on coastal ridge c.350m south of Wharekohu Bay. MI. One small patch amongst tall vegetation near south end (in assoc. with *S. scoparius*).	•	•	Seedling appeared soon after construction of Assistant Ranger' s house.
Urtica urens	•				Not recorded.	•		
Verbascum thapsus	•				KI. One small patch beside coastal strip of shrubs near middle of Waiorua Bay.	•	•	

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LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
*Verbascum virgatum**	•				KI. One small patch just north of Boysie' s house, Waiorua Bay. One small patch between beach and house immediately south of Boysie' s house.		•	
Veronica agrestis? (uncertain which sp.)	•				Not recorded.	•		Recorded as '*Veronica agrestis*?' by Fuller (1985).
Veronica arvensis	•				Not recorded.	•		
Veronica serpyllifolia	•				Not recorded.	•		
Vicia angustifolia	•				Not recorded.	•		
Vicia hirsuta	•				Not recorded.	•		
Vicia sativa	•				Not recorded.	•		
Vinca major	•				KI. One large patch just up-valley from middle of houses at Waiorua Bay. One large patch on North-east Track north of Paripatea Stream. One large patch at Wharekohu Bay, between beach and hut.	•	•	Specified for control in the Business plan, 1997-98; Wellington Conservancy.

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LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
Viola odorata? (uncertain which sp.)	•				Not recorded.	•		Recorded as *"Viola* sp. (*V. odorata*?)" by Fuller (1985).
*Vitis vinifera**		•			MI. One plant on eastern edge of southern patch of lawn.		•	Apparently not naturalised.
Vulpia bromoides	•				Not recorded.	•		
Wahlenbergia marginata	•				Not recorded.	•		Recorded as a native and as an exotic by Fuller (1985). It appears to be better regarded as exotic to New Zealand (Ogle, 1986).
*Watsonia bulbillifera**		•			MI. One small patch amongst in garden at northern end.		•	Specimen KI20.
*Zantedeschia aethiopica**	•	•			KI. Several small to large-sized patches at Waiorua Bay.		•	
'? Lily Motungarara'		•			MI. NW corner of small patch of lawn.			Apparently planted and not naturalised. Unlikely to threaten conservation values. Desirable to clarify identity.

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LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
'? Bell grass'	•				KI. One small patch on true right of mouth of Te Mingi Stream.			Unlikely to be a threat to conservation values. Unlikely to threaten conservation values. Desirable to clarify identity.
'? Daisy Okupe'	•				KI. N of Okupe Lagoon, near rat bait station K47.			Unlikely to threaten conservation values. Desirable to clarify identity.
'? J6 slip *Senecto*'	•				KI. Near bottom of Track J6; big slip on true left.			Specimen KI44. Need inflorescence for more accurate identification Unlikely to threaten conservation values. Several *Senecto* spp. are known to be naturalised amongst the four islands, but it is not worth clarifying their identities unless they are thought to be at threat to conservation values.
'? Lavender Motungarara'		•			MI. Amongst gardens.			Apparently planted and not naturalised. Unlikely to threaten conservation values.
'? Monocot Motungarara'		•			MI. Amongst gardens.			Apparently planted and not naturalised. Unlikely to threaten conservation values. Desirable to clarify identity.

*KI = Kapiti Island MI = Motungarara Island Th = Tahoramaurea Island Tk = Tokomapuna Island F = Fuller (1985) * = Not known to have been recorded previously.*
Shaded cells denote that the species has been classified as a weed using the criteria in Section 1.4

TABLE 1: EXOTIC VASCULAR PLANTS OF KAPITI ISLAND, MOTUNGARARA, TAHORAMAUREA AND TOKOMAPUNA

LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
'? Monocot Waiorua'	•				KI. One plant at Waiorua Bay.			Specimen KI59. Specimen deteriorated before identification could be attempted. Unlikely to threaten conservation values. Desirable to clarify identity. Need to collect another specimen. Appears to be spreading vegetatively from original planting site.
'? Purple fl. Motungarara'		•			MI. Amongst north-east margins of vegetation.			Unlikely to threaten conservation values. Desirable to clarify identity.
'? *Ranunculus* Motungarara'		•			MI. Amongst gardens adjacent to lawn.			Unlikely to threaten conservation values.
'? *Senecio* spp.'	•				KI. Maraetakaroro clifftop-bush edge and just south of West Point.			Specimens KI39 and KI68. Unlikely to threaten conservation values. Need inflorescences for more accurate identification. Several *Senecio* spp. are known to be naturalised amongst the four islands, but it is not worth clarifying their identities unless they are thought to be at threat to conservation values.

*KI = Kapiti Island MI = Motungarara Island Th = Tahoramaurea Island Tk = Tokomapuna Island F = Fuller (1985) * = Not known to have been recorded previously.*
Shaded cells denote that the species has been classified as a weed using the criteria in Section 1.4

TABLE 2: SOME INDIGENOUS PLANTS INTRODUCED (AND THEREFORE NOT NATIVE) TO KAPITI AND ITS NEIGHBOURING ISLANDS AND CONSIDERED WEEDS

LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
*Beilschmiedia tarairi**	•				KI. Two mature trees and several seedlings beside lower boat-shed track. Two mature trees beside lower Trig Track and several seedlings between them and the whare.		•	Many seedlings have appeared since the eradication of rats in September 1996.
Coprosma cultivated hybrid*		•			MI. One plant at southern end of lawn.		•	Specimen KI52. Probably derived from NZ native species (Bill Sykes, pers. comm.). Apparently not naturalised.
Hoheria populnea var. (*H. sexstylosa*) (introduced varieties)	•				KI. Rangatira; adjacent to Boatshed tracks. Waiorua Bay; west of southern group of houses. Possibly also elsewhere.	•	•	Recorded as '*Hoheria populnea* var. (*H. sexstylosa*)' by Fuller (1985). The sp./var. may be native to Kapiti I. (Ogle, 1986).
Metrosideros excelsa	•	•	•		KI. Many plants of all ages scattered along coastline between Waiorua and Wharekohu Bays, with some mature trees further inland but near Rangatira Flat. One mid-aged tree and several seedlings on ridge at head of Wharekohu Valley and seedlings south of this point on coastline. Possibly more seedlings on coastline between West Point and Trig Point. MI. Many plants of all age groups scattered throughout. Th. A few young plants at north-east end.	•	•	Many planted at Rangatira Flat and Waiorua Bay and possibly other parts of Kapiti I. and neighbouring islands.

KI = Kapiti Island MI = Motungarara Island Th = Taharamaurea Island Tk = Tokomapuna Island F = Fuller (1985)
** = Not known to have been recorded previously.*

TABLE 2: SOME INDIGENOUS PLANTS INTRODUCED (AND THEREFORE NOT NATIVE) TO KAPITI AND ITS NEIGHBOURING ISLANDS AND CONSIDERED WEEDS

LATIN NAME	RECORDED ON				1997 ABUNDANCE AND DISTRIBUTION	RECORDED BY		COMMENTS
	KI	MI	TH	TK		F	THIS SURVEY	
Pittosporum crassifolium	•	•		•	KI. Many plants of all age groups scattered along coastline between Waiorua Bay and Taepiro Stream. Smaller patches of younger plants at Maraetakaroro Stream and near hut at Wharekohu Bay. MI. Many plants of all ages scattered throughout. Tk. Many young plants scattered throughout.	•	•	Specimen KI5. Many planted at Rangatira Flat and Waiorua Bay and possibly other parts of Kapiti I. and neighbouring islands. Erroneously referred to by Fuller (1985) as native to Kapiti I.
Pseudopanax arboreus × *lessonii*?*	•			•	KI. Several young plants between Ranger' s house and bottom of Trig Track. Tk. Many young plants scattered throughout.		•	Appears to be a hybrid between these spp. (Rogan Colbourne, pers. comm.).
Pseudopanax crassifolius × *lessonii*?*	•				KI. Several young plants between Ranger' s house and whare.		•	Appears to be a hybrid between these spp. (Rogan Colbourne, pers. comm.).
*Pseudopanax lessonii**	•			•	KI. One large mature tree (ring-barked and apparently dying) and at least two young plants between Ranger' s house and whare. Tk. Young plants scattered throughout.		•	Hybridises with P. arboreus and P. crassifolium (Rogan Colbourne, pers. comm.), both of which are native to Kapiti I. (Fuller, 1985).

KI = Kapiti Island MI = Motungarara Island Th = Tahoramaurea Island Tk = Tokomapuna Island F = Fuller (1985)
** = Not known to have been recorded previously.*

TABLE 3: DISTRIBUTION OF WEEDS ON KAPITI, MOTUNGARARA, TAHORAMAUREA AND TOKOMAPUNA ISLANDS

GEOGRAPHICAL DISTRIBUTION	LATIN NAMES	NO.
Restricted, or likely to be restricted, to **Waiorua Valley**	*Acer pseudoplatanus, Acmena smithii, Alocasia brisbanensis, Aptum nodiflorum, Cyperus albostriatus, Erica lusitanica, Eucalyptus globulus, Eucalyptus* sp., *Ficus carica, Hedychium gardnerianum, Leptospermum* sp.? *Nephrolepis cordifolia, Plectranthus ciliatus, Pyrus communis, Ranunculus ficaria, Salix fragilis, Trachycarpus fortunei, Zantedeschia aethiopica*	18
Restricted, or likely to be restricted, to the **Rangatira area**	*Acacia dealbata? Ammophila arenaria, Beilschmiedia tarairi, Laurus nobilis, Pseudopanax arboreus* × *lessonii, Pseudopanax crassifolius* × *lessonii, Pseudopanax lessonii, Ribes rubrum, Selaginella kraussiana, Senecio mikanioides, Tropaeolum majus*	11
Restricted, or likely to be restricted to **Motungarara I.**	*Coprosma* (cultivated hybrid), *Cheiranthus cheiri, Cytisus scoparius, Fatsia japonica, Hardenbergia violacea, Leptospermum? Polygalifolium, Leucanthemum maximum, Lobularia maritima, Melanoselinum decipiens, Paraserianthes lophantha, Pelargonium* × *hortorum, Stenotaphrum secundatum, Vitis vinifera, Watsonia bulbillifera*	14
Restricted, or likely to be restricted, to **Tahoramaurea I.**	Nil.	0
Restricted, or likely to be restricted, to **Tokomapuna I.**	*Hedera helix, Sambucus nigra, Solanum dulcamara.*	3
Restricted, or likely to be restricted, to no more than a **few isolated locations** within the four islands	*Agapanthus praecox, Angelica pachycarpa, Aspidistra elatior, Callitriche stagnalis, Carpobrotus edulis, Chamaecytisus palmensis, Chrysanthemoides monilifera, Cortaderia jubata/selloana, Crocosmia* × *crocosmiiflora, Cyphomandra betacea, Erigeron karvinskianus, Euonymous europaeus, Juncus articulatus, Lavatera arborea, Lycium ferrocissimum, Malus* ×*domestica, Malva parviflora, Marrubium vulgare, Passiflora mixta, Phoenix canariensis, Polygonum persicaria, Prunus persica, Rosa rubiginosa, Rubus fruiticosus* agg., *Solanum nigrum, Solanum tuberosum, Verbascum thapsus, Verbascum virgatum, Vinca major*	30
Is, or is likely to be **widely distributed** within the four islands	*Agrostis capillaris, Aizoaceae* sp., *Arctotheca calendula, Bromus willdenowii, Cirsium arvense, Cirsium vulgare, Dactylis glomerata, Digitalis purpurea, Ehrharta erecta, Festuca arundinacea, Glaucium flavum, Lagurus ovatus, Lolium perenne, Lotus pedunculatus, Lupinus arboreus, Metrosideros excelsa, Pittosporum crassifolium, Physalis peruviana, Phytolacca octandra, Senecio bipinnatisectus, Senecio elegans, Senecio jacobaea, Silybum marianum, Solanum chenopodioides, Solanum nigrum, Solanum* sp., *Sporobolus africanus, Teline monspessulana, Ulex europeaus*	29
Previously recorded but **not found** during surveying	*Geranium robertianum, Lapsana communis, Oxalis incarnata? Paspalum dilatatum, Stipa setacea*	5
Probably extinct	*Pinus radiata*	1
Total		**111**

4. Discussion

This report lists a total of *c.*200 exotic vascular plant species records on Kapiti and neighbouring islands. This excludes garden plants at Rangatira, Waiorua Bay and Motungarara Island that were not considered a threat to the islands' biological values. Ten species (see end of Table 1) were unable to be identified accurately but are considered unlikely to be a threat to the indigenous biota of Kapiti. Eight species, indigenous to New Zealand but not native to the region were surveyed because they were of concern as a potential weed problem and could be mapped conveniently during the survey. Of the plant species recorded, 111 are considered worthy of pest management. A total of 50 species are believed to pose a *serious* threat to the indigenous biological communities of the four islands. Detailed information regarding those weeds and their distributions is stored on the National Weed database.

Few of the 111 weeds have become naturalised in relatively undisturbed, tall native vegetation. They include: *Beilschmiedia taraire, Passiflora mixta, Pseudopanax lessonii* (and hybrids), and *Selaginella kraussiana*. Reasons for this and the fact that most of the weed species appear to have limited distributions are:

- dispersal limitations (especially on the smaller islands);
- the recent history of introductions;
- the low number of introductions of exotic species to the islands;
- the low number of plants involved in each 'release',
- the distance of sites of introductions from relatively undisturbed, tall native vegetation;
- the resistance of native vegetation to colonisation (i.e., its ability to avoid displacement by introduced plants (Begon *et al.*, 1990).

Although most of the 111 weed species are limited in distribution, many of them still pose a threat to the biota of Kapiti Islands. Many are believed to be in an "*establishment phase*" a period of time during which a plant becomes established in the wild before 'expanding,' 'exploding' and then becoming 'consolidated' and 'entrenched' (Williams, 1997). It is difficult to predict precisely which plant species are likely to act in this manner in future. However, considering the potential for weeds to expand their ranges it is believed that early control will be appropriate.

Given the high number of new weeds found at Waiorua Valley, Rangatira, Motungarara and Tokomapuna it seems likely that these areas had not been surveyed thoroughly in the past. Some new records also appear to be related to very recent introductions (e.g., *Selaginella kraussiana*, *Erigeron karvinskianus*) because of their occurrence at sites visited regularly by humans and their limited distributions.

The presence of *Acacia* sp. and *Ulex europaeus* seedlings at the Assistant Ranger's house on Kapiti Island suggests these plants were accidentally introduced during its construction in 1996, perhaps as seed transported with materials or in soil on workers' boots. This highlights the need for controls to be put in place to prevent new plant invasions. Weed invasion from mainland sources is likely to occur in future and some weed species may have been overlooked during the survey. Regular inspections every two years will be an essential part of ongoing pest plant management on the islands.

5. Recommendations

5.1 PEST PLANT CONTROL PLAN

It is recommended that a comprehensive weed management plan be prepared and implemented for Kapiti Island and neighbouring islands (which may be referred to as the 'Kapiti Island pest plant management area'). Such a plan should:

- prescribe objectives for control of each weed species and every population of those species that are specific, measurable, achievable, realistic and time-framed;
- classify each population of each pest plant to be managed in terms of the urgency and practicality of controlling them;
- prepare and implement control plans for each weed population to be managed;
- include consultation and liason with land owners on whose property some weeds occur;
- monitor the success of the weed control programme through regular inspections of weed populations.

5.2 ADDITIONAL RECOMMENDATIONS

In addition to the primary recommendation of preparing and implementing a pest management plan for Kapiti Island and its neighbouring islands the following is a list of other actions that should be undertaken:

- Urgently control populations of *Acmena smithii, Erica lusitanica* and *Selaginella kraussiana* and other weeds species where control can be undertaken relatively easily and cheaply (see Appendix 1).
- Where sufficient information is not available, conduct research to establish appropriate management techniques for weeds.
- Collect seed of indigenous pioneer plant species (sourced from Kapiti Island) and propagate so that those species can be planted following control of some weed species, or to replace undesirable garden plants on private land.
- Consult landowners to obtain permission to conduct weed control operations on their land.
- Assess the abundance and distribution of other introduced New Zealand native plants on the islands.
- Map and record details of plants of historic significance on the islands (including introduced New Zealand natives and all garden plants at Rangatira, Waiorua Bay and Motungarara).
- Treat introduced exotic plants and introduced New Zealand native plants in the same manner during pest management. Objectives for indigenous plants outside their natural range may involve limiting their distribution to original plantings, as the case with Norfolk pines (*Araucaria heterophylla*) on Raoul Island (West, 1996).

- Conduct weed surveys of the islands every two years (including surveys of Okupe lagoon for aquatic weeds).
- Carry out further discussion on the issue of management of introduced indigenous plants that are not native to the islands.
- Discuss weed control issues with landowners öf Kapiti's neighbouring islands.
- Undertake further survey work to collect specimens of species not previously identified so that a more accurate assessment of their threat to the indigenous biota of Kapiti Island may be determined.
- Prepare a surveillance list of plant species to look out for on the islands that should be eradicated immediately if found.
- Assess the threat posed by mainland (North Island) sources of weed propagules to Kapiti and its neighbouring islands and plan and conduct management accordingly
- Determine whether animal pest management creates or intensifies pest plant virulence (as is thought to have occurred with *Passiflora mixta* and *Acmena smithii* on Kapiti Island after the eradication of possums (*Trichosurus vulpecula*)and rats (*Rattus exulans* and *R. norvegicus*) respectively)
- Raise public awareness of the importance of preventing accidental or intentional introductions of unwanted plant species to the islands.
- Provide information about weeds (such as photographs, descriptions and threats) to all Kapiti Island landowners and visitors to educate them about the threat that the weeds pose to the indigenous plant and animal communities.
- Provide weed infestation record sheets (Appendix 7) on Kapiti Island and encourage staff, landowners and island visitors to record sightings or suspected sightings of weeds.

6. Acknowledgements

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Appendix 1

WEEDS ON KAPITI AND NEIGHBOURING ISLANDS REQUIRING IMMEDIATE CONTROL

This table lists populations of weeds on Kapiti Island and neighbouring islands that require immediate control. Some of the weed infestations referred to below have already been controlled at time of printing (details filed at Kapiti Island office).

LATIN NAME	POSSIBLE 'PLANT OBJECTIVE'	POPULATIONS/S	LIKELY FRUITING TIME
Acmena smithii	Eradicate by 2003	• Mature tree at Waiorua Bay behind building towards S end	Mar-Jul?
Angelica pachycarpa	Eradicate by 2000	• 2 populations near beach between Tokaiti & Kurukohatu Points	Jan-Apr?
Beilschmiedia tarairi	Eradicate by 2002	• 2 mature trees at lower Trig Track; c.150m below Track 42 • 2 mature trees N & NE of whare	Nov-Feb
Erica lusitanica	Eradicate by 2000	• 1 small patch on lower Track 15, S Waiorua Bay	Sep-Jun?
Erigeron karvinskianus	Eradicate by 2001	• Just above beach c.30m S of Otehou Stream • Waiorua Bay; N side of Boysie's house • Between whare & Ranger's house	Nov-Jun?
Euonymus europaeus	Eradicate by 2000	• SE corner of Ranger's garden, Rangatira Flat • Rangatira Flat; c.30m N of vege garden	Mar-May
Lycium ferrocissimum	Eradicate by 2003	• Tahoramaurea I.; middle of N-facing slope • Kurukohatu Point • SE tip of Kurukohatu Flat	Oct-May?
Melanoselinum decipiens	Eradicate by 2000	• Motungarara Is; on S side of one of N-most buildings	Jan-May? (flowers & seeds only once)
Passiflora mixta	Eradicate by 2002	• Waiorua Bay; patches c.40m SW of houses • Ridge c.70m from S end houses & up hill • S end of Waiorua Bay, near beach & • Waiorua Bay; graveyard btwn valley & Okupe Lagoon • Motungarara Is; W of S group of buildings • Shrub/grassland btwn Waiorua Valley & Okupe Lagoon • S Waiorua Bay; on Track 15; btwn Tracks E20 & 33	Mar-Jun?

Pseudopanax lessonii	Eradicate by 2002	• 2 mature trees between Ranger's house & whare	Dec-Apr?
Selaginella kraussiana	Eradicate by 2000	• c. 4m towards whare from where Boatshed Track splits • Several patches within c.10m NW & SW of whare • Beside lower Trig Track, c.20m N of Stone Seat	?
Senecio mikanioides	Eradicate by 2000	• Swamp below whare, Rangatira • Rangatira Flat; around main junction & swamp	May-Nov?
Ulex europaeus	Contain within 1997 distribution (ongoing)	• c.400m SW of Kurukohatu Point	Jun-Jan
Verbascum thapsus	Eradicate all known populations by 2000	• Waiorua Bay; near middle of buildings, above beach	Aug-May?
Verbascum virgatum	Eradicate all known populations by 2000	• Waiorua Bay; amongst N most buildings	Dec-Jun?

Appendix 2

BIBLIOGRAPHY OF BOTANICAL LITERATURE REGARDING KAPITI ISLAND

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Appendix 3

PLANTS ON KAPITI ISLAND AND NEIGHBOURING ISLANDS IDENTIFIED AS PESTS BY WELLINGTON REGIONAL COUNCIL (W.R.C., 1996)

W.R.C. MANAGEMENT PROGRAMME	LATIN NAME	W.R.C. 'OBJECTIVE/S'	OCCUPIER OBLIGATIONS#
National surveillance	*Acmena smithii* *Conium maculatum* *Cortaderia selloana* *Cytisus scoparius* *Erica lusitanica* *Erigeron karvinskianus* *Teline monspessulana* *Lycium ferrocissimum* *Nephrolepis cordifolia* *Senecio mikanioides* *Plectranthus ciliatus* *Rosa rubiginosa* *Stipa* spp.	To reduce the spread of the plant in the Wellington region.	
Regional surveillance	*Chrysanthemoides monilifera* *Cortaderia jubata* *Passiflora mixta*	To determine levels of infestations and to monitor and record them for the duration of the strategy to assess their future potential.	
Total control	*Hedychium gardnerianum*	To ensure that all known sites of wild ginger are totally controlled on an annual basis with the view to eventual eradication from the region.	Complete destruction of all plants before seeding, using approved methods
Educational	*Rubus fruticosus* agg.	To advise occupiers of potential adverse effects. To encourage occupiers to control blackberry, using recommended techniques, so as to mitigate the potential agricultural and environmental effects, or externality effects imposed on adjoining occupiers.	

** Under sections 52 and 53 of the Biosecurity Act 1993 the sale, propagation and distribution of any organism specified as a pest in a pest management strategy is prohibited.*

W.R.C. MANAGEMENT PROGRAMME	LATIN NAME	W.R.C. 'OBJECTIVE/S'	OCCUPIER OBLIGATIONS#
Boundary control	*Senecto jacobaea*	To provide adjoining occupiers whose land is clear or being cleared of ragwort protection from further ragwort invasion.	Control all infestations within 50m of legal boundaries where adjoining/neighbouring land is clear or being cleared of ragwort. Control to be undertaken before plants reach the erect stem stage.
Boundary control	*Silybum marianum*	Where complaints are received, an authorised person will take action. To ensure that where land is clear or being cleared of variegated thistle, neighbouring occupiers control all plants within the specified boundary area before seeding.	Control all infestations within 20m of legal boundaries where adjoining/neighbouring land is clear or being cleared of variegated thistle, before seeding.
Boundary control	*Ulex europaeus*	Where complaints are received, an authorised person will take action. To ensure that where adjoining land is clear or being cleared of gorse, neighbouring occupiers maintain the control of gorse in the specified area.	Control all plants within 10m of all legal boundaries where adjoining/ Neighbouring land is clear or being cleared of gorse (waiver provisions may apply).

 # Under sections 52 and 53 of the Biosecurity Act 1993 the sale, propagation and distribution of any organism specified as a pest in a pest management strategy is prohibited.

Appendix 4

LATIN AND COMMON NAMES (AND PLANT FAMILIES) OF PLANTS REFERRED TO IN THIS REPORT

Note: this list does not include all known common names for each species.

Latin name	Common name	Family
Acacia dealbata	Silver wattle	Fabaceae
Acer pseudoplatanus	Sycamore	Aceraceae
Achillea millefolium	Yarrow	Asteraceae
Acmena smithii	White monkey apple	Myrtaceae
Agapanthus praecox	Agapanthus	Liliaceae
Agrostis capillaris	Browntop	Poaceae
Agrostis gigantea	Redtop	Poaceae
Agrostis stolonifera	Creeping bent	Poaceae
Aira caryophyllea	Silvery hair grass	Poaceae
Alocasia brisbanensis	Aroid lily	Araceae
Ammophila arenaria	Marram grass	Poaceae
Anagallis arvensis	Pimpernel	Primulaceae
Angelica pachycarpa	Angelica	Apiaceae
Anthoxanthum odoratum	Sweet vernal	Poaceae
Apium nodiflorum	Water celery	Apiaceae
Araucaria heterophylla	Norfolk Island pine	Araucariaceae
Arctotheca calendula	Cape weed	Asteraceae
Arrhenatherum elatius	Tall oat grass	Poaceae
Arthropodium cirratum	Renga renga	Liliaceae
Aspidistra elatior	Aspidistra	Convallariaceae
Beilschmiedia tarairi	Taraire	Lauraceae
Bellis perennis	Daisy	Asteraceae
Briza major		Poaceae
Briza minor	Quaking grass	Poaceae
Bromus diandrus	Ripgut brome	Poaceae
Bromus hordeaceus	Soft brome	Poaceae
Bromus willdenowii	Prairie grass	Poaceae
Callitriche stagnalis	Starwort	Callitrichaceae
Capsella bursa-pastoris	Shepherd's purse	Brassicaceae
Carduus pycnocephalus	Slender winged thistle	Asteraceae
Carduus tenuiflorus	Winged thistle	Asteraceae
Carpobrotus edulis	Iceplant	Aizoaceae
Centaurea melitensis	Malta thistle	Asteraceae
Centuarium erythraea	Centuary	Gentianaceae
Cerastium fontanum ssp. *triviale*	Chickweed	Caryophyllaceae
Cerastium glomeratum	Mouse-ear chickweed	Caryophyllaceae
Chamaecytisus palmensis	Tree lucerne	Fabaceae
Cheiranthes cheiri	Wallflower	Brassicaceae

Chenopodium album	Fathen	Chenopodiaceae
Chenopodium pumilio	Clammy goosefoot	Chenopodiaceae
Chrysanthemoides monilifera	Boneseed	Asteraceae
Cirsium arvense	Californian thistle	Asteraceae
Cirsium vulgare	Scotch thistle	Asteraceae
Conium maculatum	Hemlock	Apiaceae
Conyza albida	Fleabane	Asteraceae
Coprosma hybrid	Coprosma hybrid	Rubiaceae
Coronopus didymus	Twin cress	Brassicaceae
Coronopus squamatus	Wart cress	Brassicaceae
Cortaderia jubata	Purple pampas	Poaceae
Cortaderia selloana	Pampas	Poaceae
Cotula australis	Soldier's button	Asteraceae
Cotula coronopifolia	Batchelor's button	Asteraceae
Crepis capillaris	Hawksbeard	Asteraceae
Crocosmia ×*crocosmiiflora*	Montbretia	Iridaceae
Cynosurus cristatus	Crested dogstail	Poaceae
Cyperus albostriatus	Umbrella sedge	Cyperaceae
Cyphomandra betacea	Tamarillo	Solanaceae
Cytisus scoparius	Wild broom	Fabaceae
Dactylis glomerata	Cocksfoot	Poaceae
Digitalis purpurea	Foxglove	Scrophulariaceae
Ehrharta erecta	Veld grass.	Poaceae
Erica lusitanica	Spanish heath	Ericaceae
Erigeron karvinskianus	Mexican daisy	Asteraceae
Erodium cicutarium	Storksbill	Geraniaceae
Eucalyptus globulus	Eucalypt	Myrtaceae
Eucalyptus sp.	Eucalypt	Myrtaceae
Euonymus europaeus	European spindleberry	Celastraceae
Euphorbia peplus	Milkweed	Euphorbiaceae
Fatsia japonica	Fatsia	Araliaceae
Festuca arundinacea	Tall fescue	Poaceae
Festuca rubra ssp. *commutata*	Chewings fescue	Poaceae
Ficus carica	Fig	Moraceae
Fumaria muralis	Scrambling fumitory	Gentianaceae
Fumaria officinalis	Fumitory	Gentianaceae
Galium aparine	Cleavers	Rubiaceae
Geranium molle	Dove's foot	Geraniaceae
Geranium robertianum	Herb Robert	Geraniaceae
Glaucium flavum	Horned poppy	Papaveraceae
Hardenbergia violacea	Purple coral pea	Fabaceae
Hedera helix	Ivy	Araliaceae
Hedychium gardnerianum	Kahili ginger	Zingiberaceae
Hierochloe redolens	Karetu	Poaceae
Hoheria populnea var. (*H. sexstylosa*)	Lacebark	Malvaceae
Holcus lanatus	Yorkshire fog	Poaceae
Hordeum murinum	Barley grass	Poaceae
Hydroctyle moschata	Pennywort	Apiaceae
Hypochoeris radicata	Cat's ear	Asteraceae

Juncus articulatus	Jointed-leaved rush	Juncaceae
Lagurus ovatus	Harestail	Poaceae
Lamium purpureum	Red dead nettle	Lamiaceae
Lapsana communis	Nipplewort	Asteraceae
Laurus nobilis	Bay	Lauraceae
Lavatera arborea	Tree mallow	Malvaceae
Lavatera cretica	Cretan mallow	Malvaceae
Leontodon taraxacoides	Hawkbit	Asteraceae
Lepidium sp.	Cress	Brassicaceae
Leptospermum sp.?		Myrtaceae
Leptospermum? polygalifolium	Australian tea tree	Myrtaceae
Leucanthemum maximum	Shasta daisy	Asteraceae
Lobelia anceps	Shore lobelia	Lobeliaceae
Lobularia maritima	Alyssum	Brassicaceae
Lolium perenne	Perennial rye grass	Poaceae
Lotus pedunculatus	Lotus	Fabaceae
Lupinus arboreus	Tree lupin	Fabaceae
Luzula banksiana var. *banksiana*	A woodrush	Juncaceae
Lycium ferocissimum	Boxthorn	Solanaceae
Malus ×domestica	Apple	Rosaceae
Malva neglecta	Dwarf mallow	Malvaceae
Malva parviflora	Small-flowered mallow	Malvaceae
Marrubium vulgare	Horehouond	Lamiaceae
Medicago arabica	Spotted bur medick	Fabaceae
Medicago lupulina	Black medick	Fabaceae
Medicago nigra	Bur medick	Fabaceae
Melanoselinum decipiens	Parsnip palm	Apiaceae
Mentha spicata	Spearmint	Lamiaceae
Metrosideros excelsa	Pohutukawa	Myrtaceae
Narcissus bifloris	Daffodil	Amaryllidaceae
Nephrolepis cordifolia	Tuber ladder fern	Davalliaceae
Oxalis incarnata	Lilac oxalis	Oxalidaceae
Paraserianthes lophantha	Brush wattle	Fabaceae
Paspalum dilatatum	Paspalum	Poaceae
Passiflora mixta	Northern banana passionfruit	Passifloraceae
Passiflora mollissima	Banana passionfruit	Passifloraceae
Pelargonium ×hortorum	Zonal pelargonium	Gerianaceae
Phoenix canariensis	Canary Island date palm	
Phyllocladus trichomanoides	Tanekaha	Podocarpaceae
Physalis peruviana	Cape gooseberry	Solanaceae
Phytolacca octandra	Inkweed	Phytolaccaceae
Picris echioides	Ox tongue	Asteraceae
Pinus radiata	Radiata pine	Pinaceae
Pittosporum crassifolium	Karo	Pittosporaceae
Plantago coronopus	Buck's-horn plantain	Plantaginaceae
Plantago lanceolata	Narrow-leaved plantain	Plantaginaceae
Plantago major	Broad-leaved plantain	Plantaginaceae
Plectranthus ciliatus	Plectranthus	Lamiaceae
Poa annua	Annual poa	Poaceae

Poa pratensis	Kentucky bluegrass	Poaceae
Polycarpon tetraphyllum	Allseed	Caryophyllaceae
Polygonum aviculare	Wireweed	Polygonaceae
Polygonum persicaria	Willow weed	Polygonaceae
Portulaca oleracea	Pigweed	Portulacaceae
Prunella vulgaris	Selfheal	Lamiaceae
Prunus persica	Peach	Rosaceae
Pseudopanax arboreus	Five-finger	Araliaceae
Pseudopanax arboreus × *lessonii*	Pseudopanax hybrid	Araliaceae
Pseudopanax crassifolius	Lancewood	Araliaceae
Pseudopanax crassifolius × *lessonii*	Pseudopanax hybrid	Araliaceae
Pseudopanax lessonii	Houpara	Araliaceae
Pyrus communis	Pear	Rosaceae
Ranunculus ficaria	Celandine	Ranunculaceae
Ranunculus parviflorus	Small-leaved buttercup	Ranunculaceae
Ranunculus repens	Creeping buttercup	Ranunculaceae
Ranunculus sardous	Hairy buttercup	Ranunculaceae
Ranunculus sceleratus	Celery-leaved buttercup	Ranunculaceae
Ribes rubrum	Red currant	Grossulariaceae
Rorippa nasturtium-aquaticum	Water cress	Brassicaceae
Rosa rubiginosa	Sweet briar	Rosaceae
Rubus fruiticosus agg.	Blackberry	Rosaceae
Rumex acetosella	Sorrel	Polygonaceae
Rumex conglomeratus	Clustered dock	Polygonaceae
Rumex crispus	Curled dock	Polygonaceae
Rumex obtusifolius	Broad-leaved dock	Polygonaceae
Rumex pulcher	Fiddle dock	Polygonaceae
Rytidosperma penicillatum		Poaceae
Rytidosperma racemosum		Poaceae
Sagina procumbens	Procumbent pearlwort	Caryophyllaceae
Salix fragilis	Crack willow	Salicaceae
Sambucus nigra	Elderberry	Caprifoliaceae
Selaginella kraussiana	African club moss	Selaginellaceae
Senecio angulatus	Cape ivy	Asteraceae
Senecio bipinnatisectus	Australian fireweed	Asteraceae
Senecio elegans	Purple groundsel	Asteraceae
Senecio jacobaea	Ragwort	Asteraceae
Senecio mikanioides	German ivy	Asteraceae
Senecio sylvaticus	Wood groundsel	Asteraceae
Senecio vulgaris	Groundsel	Asteraceae
Sherardia arvensis	Field madder	Rubiaceae
Silene gallica	Catchfly	Caryophyllaceae
Silybum marianum	Variegated thistle	Asteraceae
Solanum chenopodioides	Velvety nightshade	Solanaceae
Solanum dulcamara	Bittersweet	Solanaceae
Solanum nigrum	Black nightshade	Solanaceae
Solanum pseudocapsicum	Jerusalem cherry	Solanaceae
Solanum tuberosum	Potato	Solanaceae

Soliva sp.	Onehunga weed	Asteraceae
Sonchus asper	Prickly sowthistle	Asteraceae
Sonchus oleraceus	Sow thistle	Asteraceae
Sophora microphylla var. (tree)	Kowhai	Fabaceae
Spergularia rubra	Sand spurrey	Caryophyllaceae
Sporobolus africanus	Rat's tail	Poaceae
Stellaria media	Chickweed	Caryophyllaceae
Stenotaphrum secundatum	Buffalo grass	Poaceae
Stipa setacea		Poaceae
Streblus banksii	Ewekuri, large-leaved milk tree	Moraceae
Taraxacum officinale	Dandelion	Asteraceae
Teline monspessulana	Montpellier broom	Fabaceae
Trachycarpus fortunei	Chinese windmill palm	Arecaceae
Trifolium dubium	Suckling clover	Fabaceae
Trifolium glomeratum	Clustered clover	Fabaceae
Trifolium micranthum	Lesser suckling clover	Fabaceae
Trifolium ornithopodioides	Trigonel	Fabaceae
Trifolium repens	White clover	Fabaceae
Trifolium striatum	Striated clover	Fabaceae
Tropaeolum majus	Garden nasturtium	Tropaeolaceae
Ulex europaeus	Gorse	Fabaceae
Urtica urens	Stinging nettle	Urticaceae
Verbascum thapsus	Woolly mullein	Scrophulariaceae
Verbascum virgatum	Moth mullein	Scrophulariaceae
Veronica agrestis		Scrophulariaceae
Veronica arvensis	Field speedwell	Scrophulariaceae
Veronica serpyllifolia	Turf speedwell	Scrophulariaceae
Vicia angustifolia	Narrow-leaved vetch	Fabaceae
Vicia hirsuta	Hairy vetch	Fabaceae
Vicia sativa	Vetch	Fabaceae
Vinca major	Periwinkle	Apocynaceae
Viola odorata	Violet	Violaceae
Vitex lucens	Puriri	Verbenaceae
Vitis vinifera	Grape	Vitaceae
Vulpia bromoides	Vulpia hair grass	Poaceae
Wahlenbergia marginata	Harebell	Campanulaceae
Watsonia bulbilifera	Watsonia	Iridaceae
Zantedeschia aethiopica	Arum lily	Araceae

Appendix 5

REASONS FOR OMISSION FROM EXOTIC PLANT LIST FOR KAPTI ISLAND AND NEIGHBOURING ISLANDS OF SPECIES REFERRED TO IN PREVIOUS LITERATURE

Species listed here were recorded present on Kapiti Island but are omitted from Table 1 for the following reasons.

LATIN NAME	REASON FOR OMISSION FROM TABLE 1 AND ADDITIONAL COMMENTS
Agrostis tenuis	Recorded by Fuller (1985) but is now known as *A. capillaris* (Lambrechtsen, 1992).
Arrhenatherum elatius	Recorded by Fuller (1985) but is probably an error; a possible translation of Esler's 'tall oat grass' (Esler, 1967; Ogle, 1986).
Bromus mollis	Recorded by Fuller (1985) but is now known as *B. hordeaceus* (Lambrechtsen, 1992).
Bromus unioloides	Recorded by Fuller (1985) but is now known as *B. willdenowii* (Lambrechtsen, 1992).
Carduus pycnocephalus	Recorded by Fuller (1985) but is probably an error; a dubious translation of Esler's 'Italian thistle' (Esler, 1967; Ogle, 1986).
Conyza floribunda	Recorded by Fuller (1985; 41). Two entities are recognised in what is commonly called *C. floribunda*, only one of which (*C. albida*) is naturalised in New Zealand (Webb *et al.*, 1988). This plant therefore appears as *C. albida* in Table 1.
Cotula coronopifolia	Recorded as an exotic by Fuller (1985) but is probably a New Zealand native (Bill Sykes, pers. comm.) and Kapiti I. is within its natural range (Webb *et al.*, 1988).
Erigeron floribundus	Recorded by Fuller (1985) but is now known as *C. albida* (Webb *et al.*, 1988).
Hydroctyle moschata	Recorded as an exotic by Fuller (1985) but is a New Zealand native (Hugh Wilson, pers. comm.) and Kapiti I. Within its natural range (see Webb *et al.*, 1988).
Lobelia anceps	Recorded as an exotic by Fuller (1985) but is a New Zealand native (Hugh Wilson, pers. comm.) and Kapiti I. Within its natural range (see Webb *et al.*, 1988).
Malva neglecta?	Fuller (1985) recorded '*Malva* sp. (*M. neglecta*?)'. Specimen KI47 collected but needed flowers and fruit for more accurate identification. This sp. not found on any of the four islands. Likely that the plant/s relating to Fullers record were referable to *Malva parviflora*.
Medicago hispida	Recorded by Fuller (1985) but is now known as *Medicago nigra* (Webb *et al.*, 1985).
Mentha viridis	Recorded by Fuller (1985) but is now known as *M. spicata* subsp. *spicata* (Webb *et al.* 1988).

Passiflora mollissima	Recorded by Fuller (1985) but specimens collected at Waiorua Bay and Motungarara Island were identified as *P. mixta*, so was probably identified incorrectly.
Nasturtium officinale	Recorded by Fuller (1985) but is now known as *Rorippa nasturtium-aquaticum* (Webb *et al.*, 1988).
Senecio angulatus	Although this sp. was specified for control in the *Business plan, 1997-98; Wellington Conservancy*, the plants involved have since been identified as *Senecio mikanioides*.
Trifolium micranthum	Recorded by Fuller (1985) but is probably an error; a dubious translation of Esler's '*T. filiform*' (Esler, 1967; Ogle, 1986).

Appendix 6

PEST PLANT INFESTATION RECORD SHEET

Conservancy:			Area:		
Management unit[1]:					
Common name:			Scientific name:		
Tentative name:			Entered on database (tick):		
Recorder/s:				Date:	
Specific location[2]:					
Size of infestation site:				Grid ref:	
Tenure of infestation site:			Land register no/s:		
Sketch map:			Copy of suitable map to be placed here or appended to accurately show location (& distribution if possible)		
Key: Area inspected:		Distribution of the plant:			
Land type/s[3]:				Altitude:	
Access to infestation/s:					
General vegetation (structural class/es)[4]:					
Dominant vegetation (main species):					
Distribution within area inspected[5]:					
Potential to spread [6,7]:					
Adult/juvenile ratio: /		Flowering observed: Y/N		Seeds/other propagules observed: Y/N	
Disturbance events which may have facilitated invasion [8]:					
Likely mechanism/s of arrival at this site[9]:					
Likelihood of reinvasion from areas outside the management unit[7]:					
Specimen lodged: Y / N		Photograph taken: Y/N		Person hours used:	
Other pests present (plant & animal):					
Other comments: (e.g. Immediate threat [10]) Specimen collected: Y/N No: Lodged with:					

1 Need not be restricted to one land tenure, e.g. *all* of Kapiti Island, including UCL & private land.
2 E.g. Name of catchment or adjacent settlement (be as specific as possible).
3 (From Shaw & Beadle, 1996): Topographic: high mountains; low mountains; steep hills; rolling hills; basins; fords; tablelands; plateaux; headlands; peninsulas; cliffs/escarpments Volcanic: cone; lava flow; dome; explosion crater/caldera Plains: alluvial; alluvium-filled valley; ring plain; terrace Coastal: river delta; gravel bank/spit; sand dunes/spit; beach; rocky shore; isthmus; island; stack; former island Other categories: lake/open water; fresh water wetland; estuarine wetland; river/flowing stream; sea coast
4 (From Shaw & Beadle, 1996): **Bo** = boulderfield; **Cu** = cushionfield; **Gr** = grassland; **Fe** = fernland; **Fo** = forest; **He** = herbfield; **Li** = lichenfield; **L/P** = loamfield/peatfield; **Mo** = mossfield; **Pa** = pasture; **Re** = reedland; **Ro** = rockland; **Ru** = rushland; **Sa** = sandfield; **Sc** = scrubland; **Se** = sedgeland; **Sh** = shurbland; **S/G** = stonefiled/gravefield; **Tr** = treeland; **Tu** = tussockland (incl. Flax); **Vi** = vineland; **Ga** = former/existing garden
5 **1** = locally scattered; **2** = local patches; **3** = scattered throughout; **4** = patches throughout; **5** = common throughout; **6** = one small patch; **7** = other (specify)
6 **I.e.** how likely is it that the plant could spread to vulnerable native communities?
7 **0** = none; **L** = low; **M** = moderate; **H** = high; **?** = unknown
8 **1** = track construction/maintenance; **2** = road construction/maintenance; **3** = vegetation clearance; **4** = logging; **5** = burning; **6** = construction; **7** = tree fall; **8** = slip; **9** = other (specify)
9 **0** = unknown; **1** = wind; **2** = birds; **3** = rubbish dumping; **4** carried downstream; **5** = accidental introduction by humans; **6** = intentional introduction by humans; **7** = other (specify)
10 **I.e.** what level of impact could the plant have on vulnerable native communities in the immediate vicinity of the infestation?